



Alternative Fuels

Access to and within the National Park System has been a defining experience for generations of visitors.

The National Park Service (NPS) coordinates the planning and implementation of transportation systems that improve the visitor experience and care for national parks by:

- Preserving natural and cultural resources.
- Enhancing visitor safety and security.
- Protecting plant and animal species.
- Reducing congestion.
- Decreasing pollution.

NPS is committed to being a leader in pursuing strategies that can help make park units more enjoyable, cleaner, quieter, and more sustainable for present and future generations.

For more information, visit nps.gov/transportation

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EXPERIENCE YOUR AMERICA™

To help improve air quality, decrease noise, preserve natural resources, and enhance the visitor experience, NPS is using alternative fuels to power park vehicles and alternative transportation systems (ATS) at many NPS units.



Many of the shuttle buses are powered by cleanburning compressed or liquefied natural gas fuel. (NPS Photo)

What are alternative fuels?

Alternative fuels are clean-burning fuels that can power motor vehicles, buses, boats, and trams. Alternative fuel vehicles tend to be more efficient than gasoline or diesel vehicles and they emit nearly 90 percent fewer toxins and ozone-forming hydrocarbons. Alternative fuels come in many forms.

- **Natural Gas** – In either a compressed (CNG) or liquefied (LNG) state, natural gas is clean burning and produces significantly fewer harmful emissions than gasoline.
- **Propane** – Propane is a by-product of natural gas processing and crude oil refining.
- **Ethanol** – Ethanol is an alcohol-based fuel produced by fermenting and distilling corn, barley, wheat, wood, and grasses.
- **Methanol** – Derived from the fermenting and distilling of wood into alcohol, methanol can be combined with gasoline to power engines or used to provide hydrogen to power fuel-cell vehicles.
- **Electricity** – Electricity can fuel vehicles through rechargeable batteries or through fuel cells that produce an electric current by combining hydrogen and oxygen.
- **Biodiesel** – Biodiesel is a clean burning alternative fuel produced from domestic, renewable resources such as soybeans or recycled restaurant greases. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend, the most popular of which is B20; a blend of 20% biodiesel and 80% petroleum diesel. It can be used in compression-ignition (diesel) engines with little or no modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics.

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Environmental benefits

Alternative fuels are more environmentally friendly than traditional gasoline and diesel fuels. Many, such as biodiesel, are biodegradable, non-toxic, and renewable. Renewable fuels are made from materials that replenish naturally and aren't likely to run out. Alternative-fuel vehicles produce fewer harmful emissions of Carbon Monoxide, Volatile Organic Compounds, Sulfur Oxides, and particulate matter. Vehicles using alternative fuels contribute less to ground-level ozone, global climate change, and acid rain problems, and help improve visibility. In addition to burning more cleanly than gasoline or diesel, alternative fuels tend to help reduce noise levels in parks. These environmentally friendly practices are now being exhibited at park sites throughout the country.

Yosemite National Park in California

In April 2005, Yosemite National Park replaced its aging fleet of diesel buses with 18 diesel-electric hybrids. As a result, particulate matter emissions have been cut by 90 percent, while fuel-efficiency has increased from 20 to 55 percent. The hybrid system relies mostly on electric power for starts and stops, which reduces exhaust and noise pollution. A regenerative braking system recaptures the energy normally wasted while braking or coasting on downhill stretches, and stores the energy in batteries for use by the electric motors at the next startup.



Acadia

National Park in Maine

Since 1999, more than two million passengers have traveled on Acadia's propane-powered Island Explorer bus fleet. These vehicles generate significantly less nitrogen oxides than regular gasoline or diesel engines. It is estimated that Island Explorer has eliminated more than 685,000 automobile trips and prevented more than 6,444 tons of greenhouse gases.

Grand Canyon National Park in Arizona

For over 30 years a shuttle bus system has transported visitors on the South Rim of Grand Canyon National Park. Many of the shuttle buses are powered by clean burning compressed or liquefied natural gas fuel. The shuttle buses provide visitors a more enjoyable stay at the park, while reducing motor vehicle pollution and traffic congestion. The shuttle bus system has carried over 75 million riders – which otherwise would have generated about a million vehicle trips each year.

